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#10/APP. Brief 10/1/01 C. McKinney

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	Paper No: 9
William J. Furnas	:	Art Unit: 2878
Serial No: 09/318,249	:	Examiner: T.Luu
Filed: May 25, 1999	:	Docket No: 5298-18

For: CONTAINER INSPECTION MACHINE

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: ASSISTANT COMMISSIONER FOR PATENTS WASHINGTON, D.C. 20231 ON Sept. 28 2001

Jean L. Dianfilippo

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

BRIEF ON APPEAL

This is an Appeal Brief and it is filed in triplicate. Please charge Deposit Account No. 50-0696 for the $310.00 fee required for filing this Brief and any additional fee due..

(1) Real Party In Interest

This application has been assigned to Emhart Glass SA which is owned by Bucher Holding AG, CH-8166, Niederweningen, Switzerland.

(2) Related Appeals And Interferences

There are none.

(3) Status Of The Claims

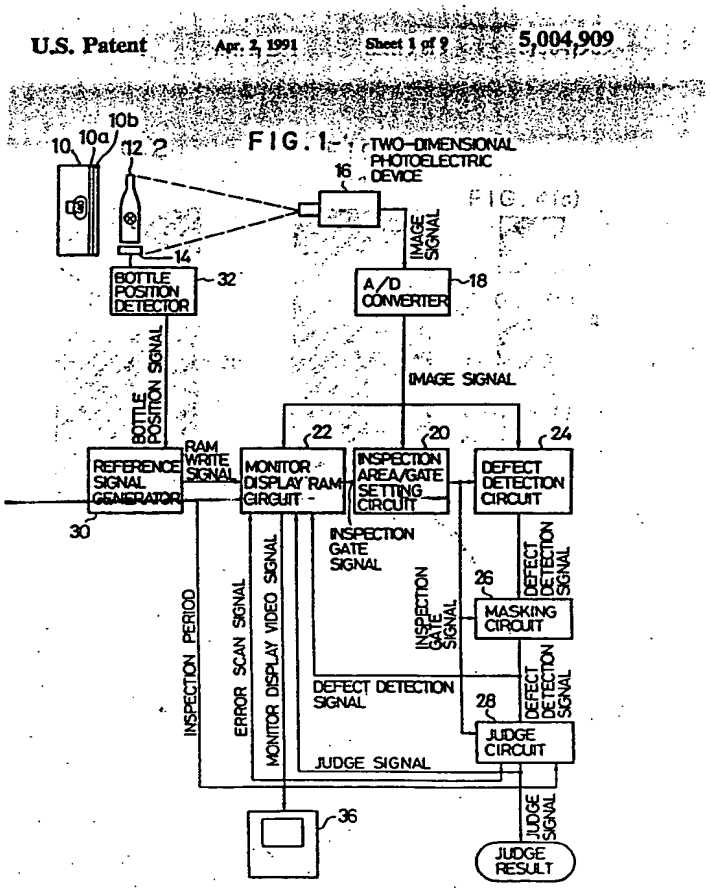
This appeal involves claims 1-7.

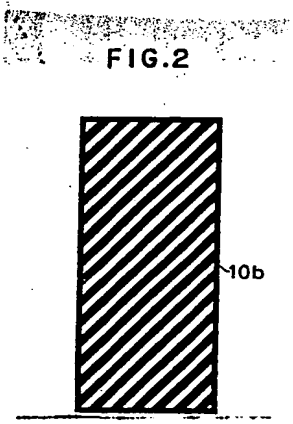
(4) Status Of Amendments

No amendment has been filed following the final rejection.

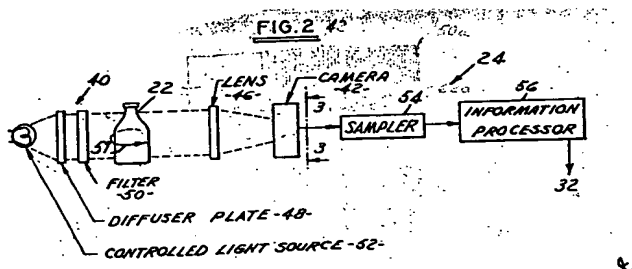
(5) Summary Of Invention

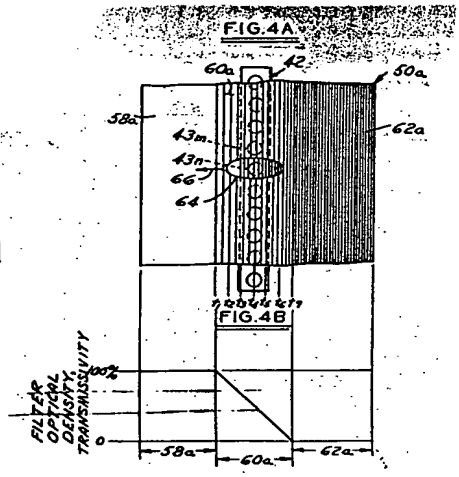
This invention concerns the identification of defects in the wall of a glass bottle. Generally, light is directed at a bottle and when a defect such as a stone, is present the light will act differently at the defect than when directed to normal glass. This difference in light action can be observed to identify the defect. One technique that has been developed is to take the light from a light source and then first direct the light through a diffusion plate to diffuse the light and then pass the diffused light through a slant slit-plate which splits the light into dark and light stripes. Cited U.S. Patent No. 5,004,909 (Fukuchi), discloses such a design in Figures 1 and 2 presented below. In Figure 1, 10 is the light source, 10a is the diffuser plate and 10b is the slant slit-plate. Figure 2 shows the slant slit-plate.





A variation of this approach is to use a filter plate 50a shown in Figure 4A of U.S. Patent No. 4,601,395 (Juvinall) presented below.





The present invention does not follow this well-defined path. The inventor herein instead uses the light source itself to create the striping. The light source 16 defines a large area of light with a large number of vertical rows of L.E.D.s 18 (page 2, line 23). Individual timers 20 are connected to each vertical row of L.E.D.'s 18 so that when the rows are turned on, the timers will time out at selected times (0T,.2T,.4T,.6T, and .8T) of an imaging cycle (the time T required for the row of L.E.D.'s to turn fully on and appear white) with light intensity being a function of the time on (page 2, line 31).

(6) Issues

1. Is claim 1 novel over Juvinall;
2. Are claims 2-7 patentable over Juvinall;

3. Is the rejection of claims 1-7 under Section 112 proper.

(7) Grouping Of The Claims

This application only has one independent claim and all dependent claims relate to claim 1.

(8) Argument

1. Is claim 1 novel over Juvinall?

The examiner has rejected the claim 1 as anticipated by Juvinall. Juvinall discloses a light source that has a single brightness level. It is shown as a single light bulb. It is accordingly impossible for the Juvinall light source to anticipate claim 1. Claim 1 clearly provides that it is the illumination area of the light source that has a variety of intensities. Claim 1
provides for

"a light source, having an illumination area,..."

Claim 1 also provides for

"means for defining on said illumination area light intensities varying between a minimum brightness level that will permit the identification of a light blocking defect and a maximum brightness level,..."

As shown in Figure 2 of Juvinall presented above, Juvinall uses a single conventional light bulb. It has a single

intensity. Intensity levels varying between a minimum brightness level and a maximum brightness level can not be defined on that light source. Juvinall accordingly does not teach the claimed invention and the Examiner's rejection under section 102 is in error and should be reversed.

2. Are claims 2-7 patentable over Juvinall.

The prior art teaches the use of filter plate and strip plates in front of the light source to define the desired stripping. Juvinall does not teach that the light source can be manipulated to achieve these results. Juvinall teaches the use of a single light bulb. How than can claims 2-7 be obvious over Juvinall.

Claim 2 defines the light source as a plurality of rows of L.E.D.s. which per claim 1 define light source areas having different intensity levels. Juvinall teaches a single light bulb -The obvious conversion would be to an L.E.D. light source having a uniform intensity.

Claims 3-7 all define the L.E.D. source as having a variety of light intensities. Again Juvinall teaches a single light bulb.

Clearly the Examiner's rejection of claims 2-7 as obvious over Juvinall should be reversed.

3. Is the rejection of claims 1-7 under Section 112 proper.

The Examiner has rejected the claims under section 112 for the following reasons:

1. "Regarding claim 1, lines 13-14, it is unclear in its given context how a "rate of change... would be identified as a defect"?

2. "Furthermore, in lines 15-18, it is unclear how comparing neighboring pixels can exhibit a 'rate of change in brightness level.' Comparing neighboring pixels simply shows a difference or similarity in the shade or color of the pixels, not a 'rate of change'. The term 'rate of change' implies the brightness changing over time, however, simple comparison between neighboring pixels lacks the time element required for the use of the term 'rate of change.' Thus, it is unclear what applicant intends to claim."

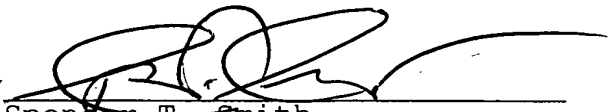
When a defect is present light will strike the defect (a bubble, for example) and will be refracted or reflected differently than light passing through a perfect wall portion. The bubble could in effect appear black because all light hitting the bubble is directed away from its initial direction toward the camera. There is a change of intensity as the camera scans across an edge between two intensity levels. If three horizontal pixels are reviewed moving horizontally across a scan line they could go from three white, to two white and one 80% white, to one white and two 80% white, to three 80% white. This would indicate a rate of change due to the transition in intensity. If the bubble is detected the transition might go from three white to two white to black, to one white to two black to three black. This would be a rate of change in intensity higher than transitioning across an intensity change and would be seen as a fault.

The language of claim is clear.

3. "It is unclear if 'a light blocking defect' and a 'defect' refer to the same defect." The specification describes light blocking defects and refractive defects (page 5, line 8) and light blocking defect is a specific defect and defect is generic to all the defects. The language appears to be clear.

The examiner's rejection under section 112 should accordingly be reversed.

Respectfully submitted.

By 
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CLAIMS

1. A machine for inspecting the wall of a bottle comprising

a conveyor for supporting a bottle at an inspection station,

the inspection station including

a CCD camera on one side of the conveyor having a camera image,

a light source, having an illumination area, on the other side of the conveyor, for imaging the bottle on said CCD camera image,

means for defining on said illumination area light intensities varying between a minimum brightness level that will permit the identification of a light blocking defect and a maximum brightness level, the brightness level varying spatially, cyclically, and continuously at a rate of change which is less than a rate of change that would be identified as a defect,

computer means for analyzing said camera image by comparing neighboring pixels to determine the rate of change in brightness level to identify defects where the rate of change exceeds a defined value.

2. A machine for inspecting the wall of a bottle according to claim 1, wherein said light source comprises a plurality of L.E.D. rows.

3. A machine for inspecting the wall of a bottle according to claim 2, wherein said plurality of L.E.D. rows define a plurality of row groups each including a row having a maximum brightness level, a row having a minimum brightness level, at least one row intermediate said row having said maximum brightness level and said row having said minimum brightness level having a brightness level between said minimum brightness level and said maximum brightness level, and at least one row

on the side of the row having the minimum brightness level remote from said row having the maximum brightness level having a brightness level between the minimum brightness level and the maximum brightness level.

4. A machine for inspecting the profile and wall of a bottle according to claim 3, wherein there are a plurality of vertical L.E.D. rows intermediate the row having the minimum brightness level and the row having the maximum brightness level and the brightness level of said plurality of intermediate rows uniformly reduces from the row having the maximum brightness level to the row having the minimum brightness level.

5. A machine for inspecting the profile and wall of a bottle according to claim 4, wherein there are a plurality of vertical L.E.D. rows on the side of said row having the minimum brightness level remote from said row having the maximum brightness level and the brightness level of said plurality of said rows on the side of said row having the minimum brightness level remote from said row having the maximum brightness level uniformly increasing in brightness level proceeding away from the row having the minimum brightness level.

6. A machine for inspecting the profile and wall of a bottle according to claim 5, wherein the row having the minimum brightness level has a brightness level of about 20% of the maximum brightness level and wherein each of said vertical L.E.D. row groups has three vertical rows intermediate the row having the minimum brightness level and the row having the maximum brightness level, with the row adjacent the row having the minimum brightness level having a brightness level of about 40% of the maximum brightness level and the row adjacent the row having the maximum brightness level having a brightness level of about 80% of the maximum brightness level and the intermediate of the three vertical rows intermediate the row

having the minimum brightness level and the row having the maximum brightness level having a brightness level of about 60% of the maximum brightness level.

7. A machine for inspecting the profile and wall of a bottle according to claim 6, wherein each of said vertical L.E.D. row groups has three vertical rows on the side of the row having the minimum brightness level remote from the row having the maximum brightness level, with the row adjacent the row having the minimum brightness level remote from the row having the maximum brightness level having a brightness level of about 40% of the maximum brightness level and the next of the three vertical rows on the side of the row having the minimum brightness level remote from the row having the maximum brightness level having a brightness level of about 60% of the maximum brightness level and the last of the three vertical rows on the side of the row having the minimum brightness level remote from the row having the maximum brightness level having a brightness level of about 80% of the maximum brightness level.